

2. Compliance Summary

Lawrence Livermore National Laboratory (LLNL) activities comply with federal, state, and local environmental regulations, internal requirements, Executive Orders, and U.S. Department of Energy (DOE) Orders as specified in Contract DE-AC52-07NA27344. This chapter provides an overview of LLNL's compliance programs and activities during 2017, as well as a listing of all active environmental permits.

2.1 Environmental Restoration and Waste Management

2.1.1 Comprehensive Environmental Response, Compensation and Liability Act

Ongoing remedial investigations and cleanup activities for legacy contamination of environmental media at LLNL fall under the jurisdiction of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Title I of the Superfund Amendments and Reauthorization Act (SARA). CERCLA is commonly referred to as the Superfund law.

CERCLA compliance activities for the Livermore Site and Site 300 are summarized in **Sections 2.1.1.1** and **2.1.1.2**. Community relations activities conducted by DOE/LLNL are also part of these projects. See **Chapter 7** for more information on the activities and findings of the investigations.

2.1.1.1 Livermore Site Ground Water Project

The Livermore Site came under CERCLA in 1987 when it was placed on the National Priorities List. The Livermore Site Ground Water Project (GWP) complies with provisions specified in a Federal Facility Agreement (FFA) entered into by the U.S. Environmental Protection Agency (EPA), DOE, the California EPA's Department of Toxic Substances Control (DTSC), and the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). As required by the FFA, the GWP addresses compliance issues by investigating potential contamination source areas (e.g., suspected old release sites, solvent-handling areas, leaking underground tank systems), monitoring water quality through an extensive network of wells, and remediating contaminated soil and groundwater. The primary soil and groundwater contaminants (constituents of concern) are common volatile organic compounds (VOCs), primarily trichloroethylene (TCE) and perchloroethylene (PCE). Background information on LLNL Livermore Site environmental characterization and restoration activities are presented in the *CERCLA Remedial Investigation Report for the LLNL Livermore Site* (Thorpe et al. 1990). The *LLNL Ground Water Project 2017 Annual Report* (Noyes et al. 2018) presents the current status of clean up at the Livermore Site.

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Regulatory Milestones. In calendar year 2017, the following deliverables were submitted to the regulatory agencies:

- Fifth Five-Year Review for the LLNL Livermore Site
- Fourth Quarter 2016 Self-Monitoring Report
- 2016 LLNL Ground Water Project Annual Report
- First, Second, and Third Quarter 2017 Self-Monitoring Report
- Work Plans for Well and Borehole Drilling at the Livermore Site in FY2017

Treatment Facilities. During 2017, the Livermore GWP maintained 27 groundwater and 8 soil vapor treatment facilities, and one skid-mounted soil vapor treatment test facility. The groundwater extraction wells and dual-phase extraction wells extracted about 973 million L of groundwater during 2017. The dual-phase extraction wells and soil-vapor extraction wells together removed approximately 1.8 million m³ of soil vapor.

In 2017, the Livermore GWP treatment facilities removed about 43 kg of VOCs. Since remediation efforts began in 1989, more than 22.7 billion L of groundwater and approximately 23.7 million m³ of soil vapor have been treated, removing about 3,310 kg of VOCs.

Livermore Site restoration activities in 2017 were focused on enhancing and optimizing ongoing operations at treatment facilities. Evaluation of technologies that may accelerate cleanup of the Livermore Site contaminant source areas and address areas of co-mingled VOC and low-level tritium plumes, also continued. Beneath the site, groundwater concentration and hydraulic data indicate subtle but consistent declines in VOC concentrations and areal extent of contaminant plumes in 2017. Hydraulic containment along the western and southern boundaries of the site was fully maintained in 2017, and progress was made toward interior plume and source area clean up. See Noyes et al. (2018) for more information.

Community Relations. Livermore Site community relations activities in 2017 included maintenance of information repositories and an administrative record; disseminating environment-related news releases and internal/external newsletter articles, responding to journalists' inquiries regarding the Livermore Site environmental cleanup; sending 391 letters to near neighbors living to the west of LLNL providing an update on the progress of the offsite groundwater plume cleanup; and two meetings with members of Tri-Valley Communities Against a Radioactive Environment (Tri-Valley CAREs) and the organization's scientific advisor as part of the activities funded by an EPA Technical Assistance Grant (TAG) (January and June 2017). DOE/LLNL also conducted tours of environmental restoration activities and facilities upon request, these included two CERCLA community tours of the Livermore Site (March and April 2017). In addition, DOE/LLNL environmental documents, letters, and public notices were posted on a public website: <http://www-envirinfo.llnl.gov>.

2.1.1.2 Site 300 Environmental Restoration Project

Remedial activities are ongoing at Site 300, which became a CERCLA site in 1990 when it was placed on the National Priorities List. Remedial activities are overseen by the EPA, the Central Valley Regional Water Quality Control Board (CVRWQCB), and DTSC, under the authority of an FFA for the site. Contaminants of concern at Site 300 include VOCs (primarily TCE), high-explosive compounds, tritium, depleted uranium, silicone-based oils, nitrate, perchlorate, polychlorinated biphenyls, dioxins, furans, and metals. The contaminants present in environmental media vary within the different environmental restoration operable units (OUs) at the site. See Webster-Scholten (1994) and Ferry et al. (1998) for background information on LLNL environmental characterization and restoration activities at Site 300. The *LLNL Site 300 2017 Annual Compliance Monitoring Report* (Buscheck et al. 2018) presents the current status of clean up at Site 300.

Regulatory Milestones. The Site 300 environmental restoration project had three milestones scheduled for completion in calendar year 2017. The following deliverables were submitted to the regulatory agencies:

- Annual 2016 Compliance Monitoring Report
- Second Five-Year Review Report for the Building 832 Canyon Operable Unit
- Fourth Five-Year Review Report for the General Services Area Operable Unit
- Fourth Five-Year Review Report for the Building 834 Operable Unit
- Draft Second Five-Year Review for OUs 3 and 8
- Third Five-Year Review Report for the High Explosives Process Area Operable Unit
- First Semester 2017 Compliance Monitoring Report

The following non-milestone deliverables were submitted to the regulatory agencies during 2017 including:

- Draft and Final Work Plan for Additional Characterization of Surface and Subsurface Soil at the Building 812 Firing Table Operable Unit
- Work Plans for Well Drilling at Site 300 in Fiscal Year 2017

All calendar-year 2017 milestones were met or renegotiated with the regulatory agencies.

With regulatory concurrence, the submittal dates for several deliverable documents were delayed and put on-hold as follows:

- The deliverable date for the Draft Final and Final Building 865 Remedial Investigation/Feasibility Study (RI/FS) was delayed to establish a background data set for uranium and metals.
- The deliverable date for the Building 850 Ground Water Perchlorate Focused Feasibility Study was renegotiated due to monitored natural attenuation being added as an alternative to be evaluated.

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Treatment Facilities. During 2017, the Site 300 Environmental Restoration Project (ERP) operated 15 groundwater and five soil vapor treatment facilities at Site 300. The groundwater extraction wells and dual-phase extraction wells extracted about 28.6 million L of groundwater during 2017. The dual-phase extraction wells and soil-vapor extraction wells together removed 1.5 million m³ of soil vapor.

In 2017, the Site 300 treatment facilities removed approximately 6.5 kg of VOCs, 0.070 kg of perchlorate, 1,400 kg of nitrate, 0.13 kg of the high explosive compound RDX, 0.0036 kg of silicone oils and 0.029 kg of uranium. Since groundwater remediation began in 1990, approximately 1,707 million L of groundwater and 32 million m³ soil vapor have been treated, resulting in removal of approximately 620 kg of VOCs, 1.7 kg of perchlorate, 19,000 kg of nitrate, 2.4 kg of RDX, 9.5 kg of silicone oils, and 0.056 kg of uranium.

Site 300 restoration activities in 2017 were focused on enhancing and optimizing ongoing operations at treatment facilities, continuing bioremediation treatability studies, and characterization in the Building 812 OU. Groundwater concentration data indicate declines in contaminant concentrations in 2017 and progress toward off-site and on-site plume and source area cleanup. See Buscheck et al. (2018) for more information.

Community Relations. Site 300 community relations activities in 2017 included maintenance of information repositories and an administrative record, two meetings (January and June) with members of Tri-Valley CAREs and the organization's scientific advisor as part of the activities funded by an EPA TAG, and two CERCLA community tours of Site 300 (March and April 2017). In addition, DOE/LLNL environmental documents, letters, and public notices were posted on a public website: <http://www-envirinfo.llnl.gov>.

2.1.2 Emergency Planning and Community Right-to-Know Act and Toxics Release Inventory Report

Title III of SARA, known as the Emergency Planning and Community Right-to-Know Act (EPCRA), requires owners and operators of facilities who handle certain hazardous chemicals on site to provide information on the release, storage, and use of these chemicals to organizations responsible for emergency response planning. Executive Order 13693, Planning for Federal Sustainability in the Next Decade, directs all federal agencies to comply with the requirements of the EPCRA, including SARA, Section 313, the Toxic Release Inventory (TRI) Program. EPCRA requirements and LLNL compliance are summarized in **Table 2-1**.

LLNL has reported lead release data via the Form R for Site 300 since 2002. The Form R is used for reporting TRI chemical releases and includes information about waste management and waste minimization activities. Over 99 percent of lead releases are associated with activities at the Site 300 Small Firearms Training Facility (SFTF). Data for the 2016 TRI Form R for lead at Site 300 was submitted to DOE/NNSA on May 16, 2017. Over the past several years, the lead releases have decreased due to increased use of frangible bullets.

Table 2-1. Compliance with EPCRA.

EPCRA section	Brief description of requirement	LLNL action
302	Notify SERC of presence of extremely hazardous substances.	Originally submitted 05/87.
303	Designate a facility representative to serve as emergency response coordinator.	Last update submitted 04/23/15 to San Joaquin County for Site 300 and 04/14/15 to the LPFD for Livermore Site.
304	Report releases of certain hazardous substances to SERC and LEPC.	No EPCRA-listed extremely hazardous substances were released above reportable quantities in 2017.
311	Submit SDSs or chemical list to SERC, LEPC, and Fire Department.	Per the California Office of Emergency Services, the EPCRA Section 311 requirement is satisfied by the EPCRA Section 312 submittal and the filing of necessary amendments within 30 days of handling a previously undisclosed hazardous material subject to Section 312 inventory requirements.
312	Submit hazardous chemical inventory to local administering agency (county).	Submitted to San Joaquin County and the LPFD on 01/09/17 and 02/06/17, respectively.
313	Submit Form R to U.S. EPA and California EPA for toxic chemicals released above threshold levels.	Form R for lead for Site 300 submitted to DOE on 05/16/17, DOE forwarded it to U.S. EPA and California EPA on 06/16/17.

Note: See the **Acronyms and Glossary** section for acronym definitions.

2.1.3 California Accidental Release Prevention Program

The California Accidental Release Prevention (CalARP) Program is the combined federal and state program for the prevention of accidental release of regulated toxic and flammable substances. The goal of the combined program is to eliminate the need for two separate and distinct chemical risk management programs. The purpose of the CalARP program is to prevent accidental releases of substances that can cause serious harm to the public and the environment, to minimize the damage if releases do occur, and to satisfy Community Right-to-Know laws. The CalARP program is implemented at the local government level by Certified Unified Program Agencies (CUPAs). The related federal regulations are the Clean Air Act (CAA) Section 112(r) and Title 40, Code of Federal Regulations, Part 68 (40 CFR Part 68).

LLNL submitted a revised Livermore Site CalARP Level 1 risk management plan (RMP) in September 2016. The Livermore Site RMP includes lithium hydride, hydrofluoric acid, and nitric acid.

2.1.4 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) provides the framework at the federal level for regulating solid wastes, including wastes designated as hazardous. The California Hazardous Waste Control Law (HWCL) and California Code of Regulations (CCR) Title 22 set requirements for managing hazardous wastes and implementing RCRA in California. LLNL works with DTSC and CUPA to comply with these regulations and obtain hazardous waste permits.

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The hazardous waste management facilities at the Livermore Site consist of permitted units in Area 612 and Building 625 plus Buildings 693, 695, and 696, which make up the Decontamination and Waste Treatment Facility (DWTF). Permitted waste-management units include container storage, tank storage, and various treatment processes (e.g., wastewater filtration, blending, and size reduction). LLNL submitted the permit renewal application to DTSC in April 2009, followed by submittal of the human health risk assessment (HHRA) in December 2010 as part of the permit renewal process. DTSC issued the Hazardous Waste Facility Permit on March 11, 2016. However, DTSC stayed the permit on April 29, 2016 to address three comments that were accepted on December 1, 2016. Resolution of the three appeal comments was in the DTSC appeal process as of December 31, 2017.

The hazardous waste management facilities at Site 300 consist of three operational RCRA-permitted facilities. The Explosives Waste Storage Facility (EWSF) and the Explosives Waste Treatment Facility (EWTF) are permitted to store and treat explosives waste, respectively. The Building 883 container storage area (CSA) is permitted to store routine facility-generated hazardous waste such as spent acids, bases, contaminated oil, and spent solvents. Site 300 has one post-closure permit for the RCRA-closed Building 829 High Explosives Burn Pits. DTSC issued the Hazardous Waste Facility Permit (HWFP) for EWSF, EWTF and the CSA on June 29, 2017. The HWFP is effective for 10 years, from August 7, 2017–August 7, 2027. DTSC issued the Building 829 post-closure permit on April 28, 2017. The post-closure permit is effective for 10 years, from April 27, 2017–April 27, 2027. Transportation of hazardous or mixed waste over public roads occurs by DTSC-registered transporters, including LLNL.

2.1.5 California Medical Waste Management Act

All LLNL medical waste management operations are conducted in accordance with the California Medical Waste Management Act (MWMA). The program is administered by the California Department of Public Health (CDPH) and is enforced by the Alameda County Department of Environmental Health (ACDEH) at the Main Site, and San Joaquin County Environmental Health Department (SJCEHD) at Site 300. LLNL's medical waste permits are renewed on an annual basis and cover medical waste generation and treatment activities for the Biosafety Level (BSL) 2 facilities, and one BSL 3 facility. LLNL revised the BSL 2 and 3 Medical Waste Management Plans to incorporate new requirements pursuant to California Assembly Bill (AB) 333, which became effective in January 2016. The BSL 2 and 3 Medical Waste Management Plans and Emergency Action Plans were most recently submitted to the ACDEH in August 2017.

2.1.6 Radioactive Waste and Mixed Waste Management

LLNL manages radioactive waste and mixed waste in compliance with applicable sections of DOE Order 435.1, DOE Manual 435.1-1, DOE Notice 435.1, and the LLNL-developed Radioactive Waste Management Basis for the Lawrence Livermore National Laboratory (LLNL 2012), which summarizes radioactive waste management controls relating to waste generators and treatment and storage facilities.

2.1.7 Release of Property

LLNL does not release property (e.g., vehicles, equipment, or other materials) to the public with residual radioactivity above the limits specified in DOE Order 458.1. Pursuant to written procedures, items that are potentially contaminated or activated are either surveyed prior to the release to the public, or a process knowledge evaluation is conducted to verify that the material has not been exposed to radioactive material or to energy capable of inducing radioactivity in the material. In some cases, both a radiological survey and a process knowledge evaluation are performed. Excessed items that meet the requirements for unrestricted release are donated to interested state agencies, federal agencies, or universities; redeployed to other on-site users; or released to LLNL's Donation, Utilization and Sales group. In 2017, approximately 2,200 equipment release swipes were processed by LLNL's Radiological Measurements Laboratory; the equipment may have subsequently been used onsite or released to the public. Utilizing a graded approach, LLNL only keeps track of high value released items (e.g., those items worth greater than \$100,000). In 2017, no high value items were released.

DOE issued a moratorium in January 2000 prohibiting the release of volume-contaminated metals and subsequently suspended the release of metals for recycling purposes from DOE radiological areas in July 2000. No metals subject to the moratorium or suspension were released from LLNL in 2017.

Excess property with residual radioactivity above the limits in DOE Order 458.1 is either transferred to other DOE facilities for reuse or transferred to LLNL's Radioactive and Hazardous Waste Management for disposal as radioactive waste. There were no releases of real property to the public in 2017.

2.1.8 Federal Facility Compliance Act

LLNL continues to work with DOE to maintain compliance with the Federal Facilities Compliance Act (FFCA) Site Treatment Plan (STP) for LLNL, which was signed in February 1997. LLNL completed 5 milestones during 2017. An additional 24.5 m³ of newly generated mixed waste was accepted into the approved storage facilities and added to the STP. LLNL removed approximately 26.2 m³ of mixed waste from LLNL in 2017.

Reports and certification letters were submitted to DOE as required. LLNL continued the use of available commercial treatment and disposal facilities that are permitted to accept LLNL mixed waste. These facilities provide LLNL greater flexibility in pursuing the goals and milestones set forth in the STP.

2.1.9 Toxic Substances Control Act

The Federal Toxic Substances Control Act (TSCA) and implementing regulations found in 40 CFR Parts 700–789 govern the uses of newly developed chemical substances and TSCA-governed waste. In 2017, 14 containers of TSCA-regulated PCB waste with an aggregate weight of 2,672 kilograms were transported to and disposed at the RCRA-permitted, Clean Harbors Treatment, Storage, and Disposal Facilities in Aragonite and Grassy Mountain, Utah.

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2.2 Air Quality and Protection

2.2.1 Clean Air Act

All activities at LLNL are evaluated to determine the need for air permits or equipment registrations. Air permits are obtained from the Bay Area Air Quality Management District (BAAQMD) for the Livermore Site and from the San Joaquin Valley Air Pollution Control District (SJVAPCD) and/or BAAQMD for Site 300. The BAAQMD also administers a boiler registration program for natural gas fueled boilers with rated heat input capacities greater than 2 million British Thermal Units per hour (BTU/hr) and less than 10 million BTU/hr.

Both the BAAQMD and the SJVAPCD are overseen by the California Air Resources Board (CARB). CARB also oversees the statewide permitting for portable diesel fuel-driven equipment such as portable generators and portable air compressors. In addition, CARB presides over the state-wide registration of in-use off-road diesel vehicles (e.g., diesel-powered forklifts, loaders, backhoes, graders, and cranes), on-road heavy-duty diesel vehicles with a gross vehicle weight rating > 14,000 pounds (e.g., garbage trucks, street sweepers and bucket trucks) and large spark-ignition (LSI) engine vehicles (e.g., gasoline, propane and electric forklifts, scrubbers/sweepers and industrial tow tractors).

In 2017, LLNL operated 128 permitted air-pollutant emission sources at the Livermore Site and 34 permitted air-pollutant emission sources at Site 300. In addition, LLNL maintained the registrations for 36 natural gas boilers (and its commitments to replace boilers) with the BAAQMD at the Livermore Site and continued the registrations for 77 in-use off-road diesel vehicles, 15 on-road heavy-duty diesel vehicles, and 118 LSI engine vehicles with CARB at the Livermore Site and Site 300.

In 2017, LLNL continued to maintain a Synthetic Minor Operating Permit (SMOP) with the BAAQMD to ensure that facility-wide actual emissions of regulated air pollutants from the Livermore Site did not exceed federal CAA Title V emission limits. The source categories covered under the SMOP include solvents, fuel dispensing, remediation and wastewater, and combustion. LLNL was initially issued the SMOP by the BAAQMD in 2002 after it was determined that LLNL had the potential to emit regulated air pollutants in excess of federal CAA Title V emission limits, if all emission sources at the Livermore Site were to operate at maximum capacity. As a result, LLNL agreed to receive federally enforceable permit conditions in the SMOP that reflect actual emissions of regulated air pollutants from sources rather than potential emissions from sources. As such, LLNL has been able to demonstrate through extensive monitoring and record keeping practices of emissions for sources, and meeting significantly reduced air pollutant emissions limits in the SMOP that its actual emissions are well below CAA Title V emission limits, and thus, LLNL does not have any “major sources” of air pollutant emissions per 40 CFR Part 70.2.

On July 15, 2016, Site 300 was reclassified by SJVAPCD from a Title V Major Facility to a Minor Facility with potential to emit (PTE) of less than 10 tons per year for VOCs. As a Minor

Facility, Site 300 is not mandated to tally the rolling 12-month emission as previously required by SJVAPCD. In addition, Site 300 is no longer subject to annual compliance inspections, but falls under a biennial schedule.

Under the authority of AB 32, the State of California adopted several regulations regarding emissions of greenhouse gases. California's Mandatory Reporting of Greenhouse Gas Emissions Regulation initially (for calendar years 2008-2011) required certain facilities to annually report greenhouse gas emissions from natural gas combustion when annual emissions exceeded 25,000 metric tons of CO₂ equivalent. The regulation was amended and the reporting threshold was lowered to 10,000 metric tons per year of CO₂ equivalent beginning with calendar year 2012. Since 2008, the Livermore Site's annual greenhouse gas emissions from natural gas combustion have been slightly below 25,000 metric tons CO₂ equivalent. LLNL began reporting the Livermore Site's greenhouse gas emissions from natural gas combustion for calendar year 2012 and has reported each year since.

The CARB regulation to Reduce Greenhouse Gas Emissions from Semiconductor Operations applies to semiconductor (or related devices) operations that use fluorinated gases or fluorinated heat transfer fluids (HTF). The regulation aims to reduce fluorinated compound air emissions which are very potent greenhouse gases. Facilities with semiconductor operations using fluorinated gases or HTFs are required to report fluorinated gas emissions beginning with calendar year 2010 and each calendar year thereafter. In 2017 LLNL annual emissions of fluorinated gases from semiconductor operations were below the 800 metric ton carbon dioxide equivalent (MMT CO₂e) threshold.

Also, under the authority of AB 32, California has adopted regulations pertaining to sulfur hexafluoride (SF₆), because of its high global warming potential. LLNL was required to submit an annual report to CARB describing the research uses of SF₆ and the measures taken to control the SF₆ emissions from such research activities, and was required to keep records on the amounts of SF₆ contained in and used for electrical switchgear during calendar year 2017. The reduction of greenhouse gases has been further encouraged by Executive Order 13693, which establishes an integrated strategy toward sustainability in the federal government and to make reduction of greenhouse gas emissions a priority for federal agencies.

In addition, LLNL continues to implement reductions and controls to minimize CO₂ emissions. LLNL is replacing diesel engines, boilers and hot water heaters on a continuing basis, and the new equipment is more efficient in terms of fuel use and air emissions, such as CO₂. Site 300 emissions of CO₂ are much lower than Livermore Site emissions, and there is no natural gas service at Site 300 that would generate CO₂ emissions.

The EPA has a mandatory reporting regulation for stationary emission sources, similar to California's regulation. LLNL is currently below the mandatory reporting threshold for the EPA of 25,000 metric tons per year at both the Livermore Site and Site 300.

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2.2.2 National Emission Standards for Hazardous Air Pollutants, Radionuclides

To demonstrate compliance with 40 CFR Part 61, Subpart H (National Emission Standards for Hazardous Air Pollutants [NESHAPs] for radiological emissions from DOE facilities), LLNL monitors certain air-release points and evaluates the maximum potential dose to the public. The *LLNL NESHAPs 2017 Annual Report* (Wilson et al. 2018) reported that the estimated maximum radiological dose from radioactive air emissions were $1.9 \times 10^{-2} \mu\text{Sv}$ (1.9×10^{-3} mrem) for the Livermore Site and $4.8 \times 10^{-4} \mu\text{Sv}$ (4.8×10^{-5} mrem) for Site 300. The totals are well below the $100 \mu\text{Sv/y}$ (10 mrem/y) site-wide dose limits defined by the NESHAPs regulation. The *LLNL NESHAPs 2017 Annual Report* is in Appendix D of this report.

2.3 Water Quality and Protection

LLNL complies with requirements of the Federal Clean Water Act (CWA), Porter-Cologne Water Quality Control Act, Safe Drinking Water Act (SDWA), the California Aboveground Petroleum Storage Act, Water Code, Health and Safety Code, and City of Livermore ordinances by complying with regulations and obtaining permits issued by the appropriate regulatory agencies whose mission is to protect water quality.

LLNL complies with the requirements of National Pollutant Discharge Elimination System (NPDES) and Waste Discharge Requirement (WDR) permits, and Water Quality Certifications issued by Regional Water Quality Control Boards (RWQCBs) and the State Water Resources Control Board (SWRCB) for discharges to waters of the U.S. and waters of the state. Discharges to the City of Livermore's sanitary sewer system are governed by permits issued by the Water Resources Division (WRD). The SDWA requires that LLNL register Class V injection wells with the EPA, and LLNL obtains permits from the Army Corps of Engineers (ACOE) for work in wetlands and waters of the U.S.

The CWA and California Aboveground Petroleum Storage Act require LLNL to have and implement Spill Prevention Control and Countermeasure (SPCC) plans for aboveground, oil-containing containers. The Livermore Pleasanton Fire Department (LPFD) and the San Joaquin County Environmental Health Department (SJCEHD) also issue permits for operating underground storage tanks (USTs) containing hazardous materials or hazardous waste (see **Table 2-2**). LLNL's USTs, for which permits are required, contain diesel fuel or gasoline; aboveground storage tanks, for which permits are not required, contain fuel, insulating oil, and process wastewater.

2.4 Other Environmental Statutes

2.4.1 National Environmental Policy Act and Floodplains and Wetland Assessments

The National Environmental Policy Act (NEPA) of 1969 is the U.S. government's basic environmental charter. When considering a proposed project or action at LLNL, DOE/NNSA must (1) consider how the action would affect the environment and (2) make certain that environmental information is available to public officials and citizens before decisions are made

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and actions are taken. The results of the evaluations and notice requirements are met through publication of “NEPA documents,” such as environmental impact statements (EISs) and environmental assessments (EAs) under DOE NEPA Implementing Procedures in 10 CFR Part 1021.

In 2005, DOE/NNSA completed the Final Site-Wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement (2005 SWEIS) (U.S. DOE/NNSA 2005). In 2011, DOE/NNSA prepared a Supplement Analysis (SA) (DOE/EIS-0348-SA-03) of the 2005 SWEIS to consider whether the 2005 SWEIS should be supplemented, a new EIS should be prepared, or no further NEPA documentation is required (U.S. DOE/NNSA 2011). The SA concluded that a supplement to the 2005 SWEIS or a new SWEIS was not needed. Both the 2011 SA and the 2005 SWEIS are available online at <http://www-envirinfo.llnl.gov>.

In 2017, no other EISs or EAs were completed. A draft EA was prepared for the Proposed Increase in the Weight of Explosives Detonated at LLNL Site 300 (DOE/EA-2076). A Supplement Analysis was completed for the Exascale Computing Facility Modernization (ECFM) Project (DOE/EIS-0348-SA-5). Another Supplement Analysis was completed for the Superblock Facilities (U) (DOE/EIS-0348-SA-4). Several Categorical Exclusions under DOE NEPA Regulations (10 CFR Part 1021) were completed as follows:

- Security Surveillance Project (NA-17-05)
- Building 231 Applied Materials and Engineering (NA-17-01)
- Electric Vehicle Charging Station Installation and Operation (NA-17-04)
- Roof Replacements at LLNL (NA-17-03)
- Proposal to Extend Special Use Lease Agreement No. 1717 (Appendix A of 10 CFR Part 1021)
- Greenhouse Installation and Operation (NA-17-02)
- Lease Office 490, L’Effant Plaza SW Suite 2202, Washington DC (Appendix A of 10 CFR Part 1021)
- Wood to Fuel for California’s Transportation Sector Using Autothermal Pyrolysis (NA-17-06)
- Site 300 Granulated Activated Carbon (GAC) Filtration System (NA-17-07)
- Building 363 Deconstruction, Demolition, and Site Restoration (NA-17-08)

There were no proposed actions at LLNL that required separate DOE floodplain or wetlands assessments under DOE regulations in 10 CFR Part 1022.

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2.4.2 National Historic Preservation Act

The National Historic Preservation Act (NHPA) provides protection and preservation of historic properties that are significant in the nation's history. LLNL resources subject to NHPA consideration range from prehistoric archeological sites to remnants of LLNL's own history of scientific and technological endeavors. The responsibility to comply with the provisions of the NHPA rests with DOE/NNSA as the lead federal agency in this undertaking. LLNL supports the agency's NHPA responsibilities with direction from DOE/NNSA.

In 2005, in consultation with DOE/NNSA, the California State Historic Preservation Officer (SHPO) formally determined that five archaeological resources, five individual buildings, two historic districts (encompassing 13 non-contiguous individual buildings), and selected objects in another building at LLNL are eligible for listing in the National Register of Historic Places (NRHP). In 2017, DOE consulted with SHPO and the Advisory Council on Historic Presentation (ACHP) to remove B332, B280, and the Process Area Historic District from the eligibility list. In each case, as final mitigation for loss of integrity of the facility for the period of historic significance, DOE and LLNL prepared Historic American Engineering Report (HAER) or Historic American Building Survey (HABS) documentation.

2.4.3 Antiquities Act of 1906

The Antiquities Act provides for protection of items of antiquities (i.e., archaeological sites and paleontological remains). The five NRHP-eligible archaeological sites noted in Section 2.4.2 are protected under the Antiquities Act. No paleontological remains subject to the provisions of the Antiquities Act were identified in 2017.

2.4.4 Endangered Species Act and Sensitive Natural Resources

LLNL meets the requirements of the Federal and State Endangered Species Acts (ESAs), the Eagle Protection Act, the Migratory Bird Treaty Act, and other applicable regulations as they pertain to endangered species, threatened species, and other special-status species (including their habitats) and designated critical habitats that exist at the LLNL sites.

On November 1, 2017, DOE/NNSA requested formal consultation with the U.S. Fish and Wildlife Service for continued operations and maintenance of the LLNL Experimental Test Site, Site 300.

2.4.5 Federal Insecticide, Fungicide, and Rodenticide Act

LLNL complies with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), which provides federal control of the distribution, sale, and use of pesticides and requires that commercial users of pesticides are certified pesticide applicators. The California Department of Pesticide Regulation (DPR) has enforcement responsibility for FIFRA in California; DPR has in turn given enforcement responsibility to county departments of agriculture. All pesticides at LLNL are applied, stored, and used in compliance with FIFRA and other California, Alameda County, and San Joaquin County regulations governing the use of pesticides. The staff of the Landscape and Pest Management Shop at the Livermore Site and the Laborer/Gardener Shop at

Site 300 includes certified pesticide applicators. These shops ensure that all storage and use of pesticides at LLNL is in accordance with applicable regulations. LLNL also reviews pesticide applications to ensure they do not result in impacts to water quality or special status species.

2.5 Environmental Permits, Inspections, and Occurrences

LLNL's various missions require a variety of permits. **Table 2-2** is a summary of active permits in 2017 at the Livermore Site and Site 300. The external agencies that issue the permits may also perform inspections required by the permits. **Table 2-3** lists environmental inspections and findings from both LLNL sites in 2017.

Notification of environmental occurrences is required under a number of environmental laws and regulations as well as DOE Order 232.2 (Occurrence Reporting and Processing of Operations Information). **Table 2-4** provides a list of environmental incidents reportable under DOE Order 232.2.

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Table 2-2. Active permits in 2017 at the Livermore Site and Site 300.

Type of permit	Livermore Site ^(a)	Site 300 ^(a)
Hazardous waste	<p>EPA ID No. CA2890012584. Hazardous Waste Facility Permit Number 99-NC-006 (RCRA Part B permit)—to operate hazardous waste management facilities. Agency—DTSC.</p> <p>Registered Hazardous Waste Hauler authorized to transport wastes from Site 300 to the Livermore Site. Permit number 1351. Agency—DTSC.</p> <p>LPFD Facility I.D. # 10697. Hazardous Waste Generator Program, On-site treatment of hazardous waste (tiered permitting) program: Conditionally Exempt Specified Wastestream, CE231-1, Hazardous Materials Business Program, Above Ground Petroleum Tank Program, and CA Accidental Release Program.</p>	<p>EPA ID No. CA2890090002. Hazardous Waste Facility Permit—CSA (Building 883), EWTF and EWSF. Agency—DTSC.</p> <p>Hazardous Waste Facility Post-Closure Permit No. 02-BRK-04—Closed Building 829 High Explosives Open Burn Treatment Facility. Agency—DTSC.</p> <p>Facility I.D. # FA0003934 RCRA Hazardous Waste Generator category: waste generation in an amount equal to or more than 50 tons, but less than 250 tons. Agency—SJCEHD CUPA.</p>
Medical waste	<p>ACDEH issued a permit (PT0200461/PT0305526) that covers medical waste generation and treatment activities for BSL 2 facilities at B132 North and South, B150 Complex, B360 Complex, B663, and the BSL 3 facility.</p>	<p>Registered with SJCEHD as a Small Quantity Medical Waste Generator.</p>
Air	<p>BAAQMD issued 128 permits for operation of various types of equipment.</p> <p>BAAQMD issued a revision to the SMOP in 2015, which was initially issued in 2002 to ensure the NO_x and HAPs emissions from the site do not exceed federal Clean Air Act Title V emission limits.</p> <p>BAAQMD issued 3 Asbestos Removal and Demolition Permits.</p> <p>CARB renewed 3 permits for the operation of portable diesel air compressors and generators.</p>	<p>SJVAPCD issued 34 permits for operation of various types of equipment.</p> <p>SJVAPCD approved a Prescribed Burn Plan for the burning of 1,755.6 acres of grassland.</p> <p>BAAQMD issued 2 permits for the operation of an emergency diesel generator.</p> <p>CARB issued 1 permit for the operation of a portable auxiliary engine on street sweeper.</p> <p>BAAQMD approved a Prescribed Burn Plan for the burning of 139.1 acres of grassland.</p>
Underground Storage tanks	<p>One operating permit (092813-10697) issued by LPFD covering operation of 9 USTs from September 20, 2013–September 19, 2018.</p>	<p>One operating permit covering 3 underground petroleum storage tanks assigned individual permit numbers (PT0006785 [879TFUD01], PT0006530 [882TFUD01], and PT0007967 [879TFUG01]).</p>
Sanitary sewer	<p>Discharge Permit 1250^(b) for discharges of wastewater to the sanitary sewer.</p> <p>Permit 1510G for discharges of groundwater from CERCLA restoration activities.</p>	<p>WDR R5-2008-0148 for operation of sewage evaporation pond.</p>

Table 2-2. (cont.) Active permits in 2017 at the Livermore Site and Site 300.

Type of permit	Livermore Site ^(a)	Site 300 ^(a)
Water	<p>WDR No. 88-075 for discharges of treated groundwater from Treatment Facility A to recharge basin.^(c)</p> <p>NPDES General Permit 2014-0057-DWQ (Waste Discharge Identification Number [WDID] 2 011025682) for discharge of storm water associated with industrial activities.</p> <p>NPDES General Permit 2009-009-DWQ for discharges of storm water associated with construction activities affecting 0.4 hectares (1 acre) or more.</p> <p>FFA for groundwater investigation/remediation.</p>	<p>WDR No. 93-100 for post-closure monitoring requirements for two Class I landfills.</p> <p>WDR R5-2008-0148 for operation of sewage evaporation pond and discharges to percolation pits and septic systems.</p> <p>NPDES General Permit 2014-0057-DWQ (WDID 5S39I021179) for discharge of storm water associated with industrial activities.</p> <p>NPDES Regional General Permit R5-2013-0074-025 for large volume discharges from the drinking water system.</p> <p>Domestic Water Supply Permit No. 01-10-16PA-003</p> <p>FFA for groundwater investigation/remediation.</p> <p>32 registered Class V injection wells.</p>

Note: See the **Acronyms and Glossary** section for acronym definitions.

^(a) Numbers of permits are based on actual permitted units or activities maintained and/or renewed by LLNL during 2017.

^(b) Permit 1250 includes some wastewater generated at Site 300 and discharged at the Livermore Site.

^(c) Recharge basin referenced in WDR Order No. 88-075 is located south of East Avenue within Sandia National Laboratories/California boundaries. The discharge no longer occurs; however, the agency has not rescinded the permit.

2. Compliance

Table 2-3. Inspections of Livermore Site and Site 300 by external agencies in 2017.

Medium	Description	Agency	Date	Finding		
Air	Air pollutant emission sources (Livermore Site)	BAAQMD	01/26/17	No violations		
			03/23/17	No violations		
			04/24/17	No violations		
			05/25/17	No violations		
			06/29/17	No violations		
			08/29/17	No violations		
			09/28/17	No violations		
			10/26/17	No violations		
			11/30/17	No violations		
			Synthetic Minor Operating Permit (SMOP) (Livermore Site)	BAAQMD	08/30/17	No violations
Air pollutant emission sources (Site 300)	SJVAPCD	07/25/17	No violations			
		11/07/17	No violations			
Hazardous Materials Business Plan	CUPA Inspection (Livermore Site)	LPFD	07/24/17 -07/27/17	No violations		
	CUPA Inspection (Site 300)	SJCEHD	NA	No inspections in 2017		
Pesticides	Pest control records inspections (Livermore Site)	ACCDA	NA	No inspections in 2017 (December 2016 inspection valid until 12/31/17)		
Sanitary sewer	Annual Inspection of the Sewer Monitoring Complex (Livermore Site)	WRD	10/02/17	No violations		
			Categorical sampling/inspection Buildings 153 and 321C (Livermore Site)	04/05/17	No violations	
				10/03/17	No violations	
			Annual compliance sampling at the Sewer Monitoring Complex (Livermore Site)	WRD	10/03/17	No violations
			Café grease interceptor inspections, Buildings 123 and 471 (Livermore Site)	WRD	10/02/17	No violations
			Quarterly BOD/total suspended solids (TSS) sampling at Outfall (Livermore Site)	WRD	01/31/17	No violations
05/09/17	No violations					
07/13/17	No violations					
11/16/17	No violations					

Table 2-3. (cont.) Inspections of Livermore Site and Site 300 by external agencies in 2017.

Medium	Description	Agency	Date	Finding
Storage tanks	Compliance with underground storage tank requirements and operating permits (Livermore Site)	LPFD	07/20/17 08/15/17	LPFD issued one violation for 7/20/17 inspection: Last 12 months of designated operator monthly inspections not maintained.
	Compliance with underground storage tank requirements and operating permits (Site 300)	SJCEHD	08/01/17	SJCEHD issued two violations for: Failure to document an alarm verification on a monthly inspection report; and failure to document a monthly inspection.
	UST spill bucket repair inspection	SJCEHD	06/26/17 06/29/17 07/17/17	No violations
	CUPA Inspection (Livermore Site)	LPFD	07/24/17–07/27/17	LPFD issued two violations for: Failure to list four 55-gallon drums on the SPCC inventory; and failure to train individuals conducting APSA/SPCC inspections.
	801-T1A1 Tank Closure	LPFD	2/28/17	No violations
Waste	CUPA Inspection (Livermore Site)	LPFD	07/24/17–07/27/17	LPFD issued one violation for: Improperly marking a container as “waste oil” rather than “USED OIL.”
	CUPA Inspection, Site 300	SJCEHD	11/28/17–11/30/17	SJCEHD issued two violations for: Failure to keep hazardous waste container closed, and failure to completely label hazardous waste container.
	Hazardous waste facilities Compliance Evaluation Inspection (CEI) (Site 200)	EPA	NA	No inspections in 2017
	Hazardous waste facilities Compliance Evaluation Inspection (CEI) (Site 300)	EPA/DTSC	NA	No inspections in 2017
	Medical Waste facilities inspection	ACDEH	08/23/17	No violations
Water	Permitted operations (Site 300)	CVRWQCB	NA	No Inspections in 2017

Note: See the **Acronyms and Glossary** section for acronym definitions.

2. Compliance

Table 2-4. Environmental Occurrences reported under the Occurrence Reporting System in 2017.

Date ^(a)	Occurrence category/group	Description
01/11/17	Significance Category SC4 Occurrence under Group 9(1) OR 2017-0001	On January 11, 2017, LLNL received a Notice of Violation from the SJCEHD as a result of a CUPA Inspection conducted in November/December 2016. The inspection report included a total of eight violations: Four violations related to record keeping and/or documentation; one violation for failure to keep a hazardous waste container closed, two violations related to waste labeling and storage, and one violation related to Universal Waste. These violations were listed in Table 2-3 of the 2016 Site Annual Environmental Report.
07/21/17	Significance Category SC4 Occurrence under Group 9(1) OR 2017-0028	On July 21, 2017, LLNL received a Notice of Violation from the LPFD following a site wide inspection of underground fuel tanks associated with generators. The notice identified a one-month lapse in inspections for a number of underground storage tanks (USTs).
08/01/17	Significance Category SC4 Occurrence under Group 9(1) OR 2017-0029	On August 1, 2017, LLNL received an Underground Storage Tank Program Inspection Report from the SJCEHD which contained two minor violations identified during an underground storage tank inspection at S300. The violations included: Failure to document an alarm verification on a monthly inspection report; and failure to document a January 2017 monthly inspection. These two violations were rescinded August 2, 2017.
08/07/17	Significance Category SC4 Occurrence under Group 9(1) OR 2017-0030	On August 7, 2017, LLNL received a Notice of Violation from the LPFD as a result of a CUPA inspection that identified three minor violations, including: Failure to list four 55-gallon drums on the SPCC inventory; failure to train individuals conducting APSA/SPCC inspections; and improperly marking a container as “waste oil” rather than “USED OIL.”
11/30/17	Significance Category SC1 Occurrence under Group 9(1) OR 2017-0045	On November 30, 2017, LLNL received a Notice of Violation from the SJCEHD as a result of a CUPA Inspection at S300 noting two minor violations for: Failure to keep hazardous waste container closed; and failure to completely label hazardous waste container.

Note: See the **Acronyms and Glossary** section for acronym definitions.

^(a) Date the occurrence was categorized, not discovered.

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